

REMARKS

Reconsideration and allowance of this application are respectfully requested. Currently, claims 1, 3, 5, 7, 11, 13, 17, 19, 23, 25, 27, 29, 31, 33, 35, 37, 39, 43, 45, 47, 49-51, 53, 59, 61, 67, 69 and 75-98 are pending in this application.

Citation of U.S.P. 4,664,773 on Form PTO-892:

Since the Suzuki et al. reference (U.S.P. 4,664,773) was utilized to reject some of the claims in the outstanding Office Action, Applicant believes that this reference has been fully considered by the Examiner. Applicant therefore requests that this reference be cited on a Form PTO-892 so that the record is clear.

Objections to the Disclosure:

The disclosure was objected to because of various informalities. Applicant has corrected the informalities in light of the Examiner's helpful suggestions.

Claim 20 was objected to as being identical to claim 19. Claim 20 has been canceled, thereby rendering this objection moot.

Rejections Under 35 U.S.C. §102 and §103:

Claims 1-67, 69 and 71-74 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Okazaki et al. (U.S. '641, hereinafter "Okazaki"). Applicant respectfully traverses this rejection with respect to the still pending claims.

Anticipation under Section 102 of the Patent Act requires that a prior art reference disclose every claim element of the claimed invention. See, e.g., *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1574 (Fed. Cir. 1986). Okazaki fails to disclose every claim element of the claimed invention. For example, Okazaki fails to disclose the following claimed elements of claims 1 and 45: a limiting current region is set within a voltage level range between

first and second voltage points, the voltage level range of the limiting current region is adjusted to a temperature-considered voltage level range such that voltage level ranges of the limiting current region in a plurality of temperature conditions of the sensor element overlap with one another within the temperature-considered voltage level range, and the applied voltage line is adjusted so as to pass through the temperature-considered voltage level range of the limiting current region.

Through at least the above noted features of claims 1 and 45, the element current can be detected in a voltage region in which water is not decomposed, so that the applied voltage can be reliably controlled in the current limiting region. Accordingly, the precision of the detection of the element current can be improved. Further, the applied voltage line can be set at any of the temperatures of the sensor element. Therefore, the applied voltage can be set within the limiting current regions at any of the temperatures of the sensor element.

Okazaki also fails to disclose the following elements of claim 49 and new claim 75: a limiting current region is set within a voltage level range between first and second voltage points, the voltage level range of the limiting current region is adjusted to an adjusted voltage level range by considering the output characteristic of a sensor element variable with time, and the applied voltage line is adjusted so as to pass through the adjusted voltage level range of the limiting current region.

Through at least the above noted features of claims 49 and 75, even when a voltage level range of the limiting current region changes with time, the applied voltage can be appropriately adjusted, and the detection precision in the gas concentration can be maintained for a long time.

Okazaki also fails to disclose the following element of claim 39 and new claim 94: an inclination of the applied voltage line is placed between an inclination of the low-voltage side

line and an inclination of the high-voltage side line. The applied voltage line can therefore reliably pass through the limiting current regions. The gas concentration can thus be reliably detected with high precision. Further, in the invention of claim 39, the applied voltage can be set within the limiting current regions at any of the temperatures of the sensor element. In the invention of new claim 94, the detection precision in the gas concentration can be maintained for a long time.

Okazaki also fails to disclose the following elements of claim 47: a limiting current region is set within a voltage level range between first and second voltage points, the voltage level range of the limiting current region is adjusted to a temperature-considered voltage level range by considering a minimum temperature and a maximum temperature actually attainable in a using environment of a sensor element, and the applied voltage line is adjusted so as to pass through the temperature-considered voltage level range of the limiting current region.

To facilitate a proper understanding the independent claims, Applicant has provided the following comments regarding the independent claims:

Claim 1 now incorporates the subject-matter of canceled claims 10 and 22.

Claim 39 now incorporates the subject-matter of canceled claims 10 and 22.

Claim 45 now incorporates the subject-matter of canceled claim 22.

Claim 47 now incorporates the subject-matter of canceled claim 10.

Claim 49 now incorporates the subject-matter of canceled claim 10.

New claim 75 incorporates the subject-matter of canceled claims 2, 10 and 26.

New claim 94 incorporates the subject-matter of canceled claims 40, 10 and 26.

Claim 1 (as amended) requires:

a first feature “defines a characteristic of the applied voltage so as to linearly change the applied voltage with the element current detected in said detecting unit along an applied voltage line corresponding to the applied voltage characteristic,”

a second feature “sets a limiting current region within a voltage level range between a first voltage point, at which an electromotive force of said sensor element changing with an increase of the applied voltage starts to come into a balance with said applied voltage, and a second voltage point, at which a decomposition of water contained in the detection gas starts, for each of levels of the specific component concentration,”

a third feature “adjusts the applied voltage line such that the applied voltage line passes through the limiting current region set for each level of the specific component concentration within the gas concentration detection range,”

a fourth feature “adjusts the voltage level range of the limiting current region to a temperature-considered voltage level range for each level of the specific component concentration such that voltage level ranges of the limiting current region in a plurality of temperature conditions of the sensor element overlap with one another within the temperature-considered voltage level range,”

a fifth feature “adjusts the applied voltage line so as to pass through the temperature-considered voltage level range of the limiting current region for each level of the specific component concentration,” and

a sixth feature “controls the applied voltage according to the applied voltage line.”

Amended claim 39 differs from amended claim 1 in that the claim 39 contains a seventh feature “adjusts the applied voltage line in a predetermined concentration range of the specific

component such that an inclination of the applied voltage line is placed between an inclination of a low-voltage side line defined by connecting the first voltage points of the limiting current regions and an inclination of a high-voltage side line defined by connecting the second voltage points of the limiting current regions” in place of the third feature.

New claim 75 differs from the amended claim 1 in that the claim 75 contains an eighth feature of “adjusts the voltage level range of the limiting current region to an adjusted voltage level range for each level of the specific component concentration such that a voltage level range of the limiting current region determined by an initial output characteristic of said sensor element and a voltage level range of the limiting current region determined by an estimated output characteristic of said sensor element after variation with time overlap with each other within the adjusted voltage level range” in place of the fourth feature.

New claim 94 differs from claim 75 in that claim 75 contains the seventh feature in place of the third feature.

Accordingly, Applicant respectfully requests that the rejections under 35 U.S.C. §102(b) over Okazaki be withdrawn.

Claims 68 and 70 were rejected under 35 U.S.C. §103 as allegedly being unpatentable over Okazaki in view of Suzuki et al. (U.S. ‘773, hereinafter “Suzuki”). Suzuki fails to resolve the above-described deficiencies of Okazaki. Accordingly, Applicant respectfully requests that the above-noted rejection under 35 U.S.C. §103 be withdrawn.

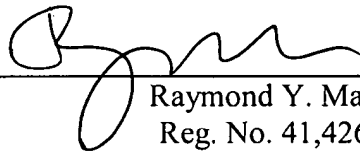
SUZUKI et al
Appl. No. 10/765,881
March 3, 2008

Conclusion:

Applicant believes that this entire application is in condition for allowance and respectfully requests a notice to this effect. If the Examiner has any questions or believes that an interview would further prosecution of this application, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 
Raymond Y. Mah
Reg. No. 41,426

RYM:dmw
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100